

CLAIMS

1. (Amended)

A transmission method comprising the steps of:  
producing a plurality of finite-length signals of a  
length  $N_m$

$$S_{A,X} = (x_0 A, 0 \dots 0, x_1 A, 0 \dots 0, x_2 A, 0 \dots 0, \dots, x_{m-1} A, 0 \dots 0)$$

$$S_{B,Y} = (y_0 B, 0 \dots 0, y_1 B, 0 \dots 0, y_2 B, 0 \dots 0, \dots, y_{m-1} B, 0 \dots 0)$$

...

using a plurality of data sequences

$$A = (a_0 a_1 \dots a_{N-1}), B = (b_0 b_1 \dots b_{N-1}), \dots \text{ and}$$

a plurality of coefficient sequences

$$X = (x_0 x_1 \dots x_{m-1}), Y = (y_0 y_1 \dots y_{m-1}), \dots;$$

repeating each finite-length signal of said  
finite-length signals  $S_{A,X}, S_{B,Y}, \dots$  to produce a pseudo periodic  
signal  $\dots, S_{A,X}, S_{A,X}, S_{A,X}, \dots, \dots, S_{B,Y}, S_{B,Y}, S_{B,Y}, \dots, \dots$ ; and  
cutting out a part from said pseudo periodic signal  
to produce a signal of a predetermined length longer than  
 $N_m$  for making said signal a transmission signal.

2. (Amended)

The transmission method according to claim 1, further  
comprising the step of adding up a plurality of signals of  
a predetermined length, cut out from the pseudo periodic  
signal produced from different finite-length signals, to  
produce a transmission signal.

3. (Amended)

The transmission method according to claim 1 or 2  
wherein

a plurality of transmission signals are produced using  
different coefficient sequences and

in an arbitrary combination of said plurality of  
transmission signals, a periodic cross-coefficient function

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of the transmission data of said transmission signals is 0 for all shifts.

4. (Amended)

The transmission method according to claim 1 or 2 wherein

a plurality of transmission signals are produced using different coefficient sequences and

in an arbitrary combination of said plurality of transmission signals, the plurality of transmission signals are transmitted in parallel so that periodic spectrums of the transmission signals have no correlation.

5. (Amended)

The transmission method according to one of claims 1-4 wherein said coefficient sequence is a row vector of a DFT matrix.

6. A communication method comprising the steps of:

transmitting the transmission signal according to one of claims 1-4; and

receiving said transmission signal and outputting a data sequence via a matched filter corresponding to said coefficient sequence.

7. The communication method according to claim 6 wherein

at least one transmission signal selected from said transmission signals is used as a pilot signal for measuring multi-path characteristics, and

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the received signal has multi-path characteristics of a transmission path.

8. (Amended)

The communication method according to claim 7 wherein a plurality of transmission signals are produced using different coefficient sequences of a spreading sequence and at least one transmission data sequence selected from said transmission signals is used as the pilot signal, further comprising the steps of:

finding multi-path characteristics from the reception signal of the pilot signal; and

removing the multi-path characteristics from the reception signal of the other transmission signals using the multi-path characteristics, which are found, to produce a data sequence.

9. (Amended)

A data structure of a transmission signal comprising a signal of a predetermined length produced in accordance with a method comprising the steps of:

producing a plurality of finite-length signals of a length Nm

$$\underline{S_{A,X} = (x_0 A, 0 \dots 0, x_1 A, 0 \dots 0, x_2 A, 0 \dots 0, \dots, x_{m-1} A, 0 \dots 0)}$$

$$\underline{S_{B,Y} = (y_0 B, 0 \dots 0, y_1 B, 0 \dots 0, y_2 B, 0 \dots 0, \dots, y_{m-1} B, 0 \dots 0)}$$

...

using a plurality of data sequences

$$\underline{A = (a_0 a_1 \dots a_{N-1}), B = (b_0 b_1 \dots b_{N-1}), \dots \text{ and}}$$

a plurality of coefficient sequences

$$\underline{X = (x_0 x_1 \dots x_{m-1}), Y = (y_0 y_1 \dots y_{m-1}), \dots ;}$$

repeating each finite-length signal of said finite-length signals  $S_{A,X}, S_{B,Y}, \dots$  to produce a pseudo periodic

signal ...,  $S_{A,X}$ ,  $S_{A,X}$ ,  $S_{A,X}$  ..., ...,  $S_{B,Y}$ ,  $S_{B,Y}$ ,  $S_{B,Y}$ , ..., ...; and

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cutting out a part from said pseudo periodic signal.